

Air Quality Permit

Issued to: US Air Force - Malmstrom AFB
341 CES/CEVC
39 - 78th Street North
Malmstrom AFB, MT 59402-7536

Permit #1427-08
Administrative Amendment (AA) Request
Received: 05/16/05
Additional Information Received: 12/03/04, 07/11/05
Department's Decision on AA: 08/03/05
Permit Final: 08/19/05
AFS #013-0016

An air quality permit, with conditions, is hereby granted to the United States Air Force – Malmstrom Air Force Base (Malmstrom), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM), 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

The Malmstrom base is located primarily in Township 20 North, Range 4 and 5 East, in Cascade County. The facility is contained within approximately 3,159 acres located on the eastern edge of the City of Great Falls, Montana.

B. Current Permit Action:

On May 16, 2005, the Department of Environmental Quality (Department) received a request from Malmstrom for changes to Montana Air Quality Permit #1427-07 under the provisions contained in the Administrative Rules of Montana (ARM) 17.8.764, Administrative Amendment to Permit. The requested changes include the following:

- Removal of the Classified Document Incinerator and all associated requirements from the permit. The unit has been dismantled and removed from the facility; and
- The addition of “National Security Emergency” and “surge condition” language as recommended to Malmstrom by the United States Pentagon.

At this time, the Department does not believe that the addition of the requested “National Security Emergency” and “surge condition” language is appropriate for inclusion in the permit; therefore, the Department will not include this language under the current permit action. The Classified Document Incinerator and all associated requirements have been removed under the current permit action.

Further, based on information obtained through correspondence between the Department and Malmstrom, the Department determined that Malmstrom is a minor source of Hazardous Air Pollutants (HAPs), as defined under 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT). Based on this information, the Department determined that Malmstrom is not subject to the requirements contained in the Boiler MACT. A HAPs emission inventory is included in Section IV of the permit analysis to this permit.

SECTION II: Limitations and Conditions

A. Emission Limitations

1. Malmstrom shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any of the three heating plant boilers or the coal handling baghouse that exhibit an opacity of 20% or greater averaged over six consecutive minutes (ARM 17.8.304).
2. Particulate emissions from any of the three heating plant boilers shall not exceed 4.0 pounds per hour (lbs/hour) (ARM 17.8.752).
3. Sulfur dioxide (SO₂) emissions from any of the heating plant boilers shall not exceed (ARM 17.8.752):
 - a. 0.320 pounds per million British thermal unit (lb/MMBtu); or
 - b. 33.9 lb/hour.
4. Oxides of nitrogen (NO_x) emissions from any of the heating plant boilers shall not exceed (ARM 17.8.752):
 - a. 0.50 lb/MMBtu; or
 - b. 53 lb/hour.
5. Total heat content of the fuel combusted (coal + natural gas) in the three heating plant boilers during any rolling 12-month time period shall not exceed 999,000 MMBtu. Total Btus combusted shall be determined on a monthly basis using the following equation (ARM 17.8.749):

$$\text{Total Btus Combusted} = (A \times B) + (C \times D)$$

Where: A = Natural gas combusted million standard cubic foot (MMscf)
B = Average heat content of the natural gas (Btu/MMscf)
C = Coal combusted (tons)
D = Average heat content of the coal (Btu/ton)
6. Maximum operating level of the three heating plant boilers combined shall not exceed 212 MMBtu/hour heat input (ARM 17.8.749).
7. A dry lime scrubber and baghouse shall be used on each heating plant boiler when combusting coal (ARM 17.8.752).
8. Malmstrom shall not emit from the coal handling baghouse, particulate matter in excess of 0.02 grains per dry standard cubic foot (gr/dscf) (ARM 17.8.752).
9. A baghouse shall be used to control emissions from the coal handling system (ARM 17.8.752).
10. Malmstrom shall not cause or authorize emissions to be discharged to the atmosphere from coal storage and handling that exhibit an opacity of 20% or greater averaged over six consecutive minutes (ARM 17.8.304).
11. Malmstrom may combust coal and/or natural gas in heating plant boiler #1 and

- heating plant boiler #3 (ARM 17.8.749).
12. Malmstrom shall combust only natural gas in heating plant boiler #2 (ARM 17.8.749).
 13. Malmstrom shall obtain a coal analysis, which is representative of each load of coal received, from each coal supplier. The analysis shall contain, at minimum, sulfur content, ash content, and Btu value (ARM 17.8.749).
 14. Malmstrom shall utilize fuel storage tanks H-1 and H-2 to store only JP-8 jet fuel or a similar jet fuel with a vapor pressure <3.5 kPa (ARM 17.8.749).
 15. An internal floating roof shall be operated on each tank listed in Section I.B.4 of the permit analysis (ARM 17.8.752).
 16. Malmstrom shall not combust any hospital/medical/infectious waste, as defined in 40 CFR 60, Subpart Ce, at their facility (ARM 17.8.749).
 17. The Building 780 emergency/back-up diesel generator shall only be operated during periods when electric power from the local utility is interrupted or as necessary for routine maintenance of the generator (ARM 17.8.749).

B. Testing Requirements

1. Malmstrom shall conduct source testing for SO₂, particulate, and opacity on boilers #1 and #3 and demonstrate compliance with the emission limits contained in Section II.A.1 through 3. The above testing shall be performed while the boilers are being fired exclusively on coal. Compliance source testing shall be performed on a once every five-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.749 and ARM 17.8.105).
2. Malmstrom shall provide the Department with a record of the amount of coal being combusted and a coal analysis for sulfur and Btu value during all compliance source tests on the heating plant boilers (ARM 17.8.749 and ARM 17.8.106).
3. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
4. The Department may require further testing (ARM 17.8.105)

C. Operational and Emission Inventory Reporting Requirements:

1. Malmstrom shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis, and sources identified in Section I of the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall include the information listed below and shall be in the units as required by the Department (ARM 17.8.505).

- a. Tons of coal combusted in heating plant boilers #1 and #3, respectively;
- b. Million cubic feet of gas combusted in heating plant boilers #1, #2, and #3, respectively;
- c. Tons of coal delivered to the facility;
- d. Tons of coal processed through the coal handling system;
- e. Sulfur analysis for coal combusted during the past calendar year;
- f. Tons of ash removed from the facility;
- g. Gallons of JP-8 fuel throughput;
- h. Vehicle miles traveled on haul roads, type of vehicle category, and percent of roads paved;
- i. Gallons of diesel used in haul vehicles and unloaders; and
- j. Fugitive dust information consisting of a listing of all plant vehicles including:
 - i. Vehicle type;
 - ii. Vehicle weight;
 - iii. Number of tires on vehicle;
 - iv. Average trip length;
 - v. Number of trips per day;
 - vi. Average vehicle speed;
 - vii. Area of activity; and
 - viii. Vehicle fuel usage (gasoline or diesel) - annual total.

If the information on vehicle size has not changed over the past year, Malmstrom only needs to supply the vehicle type and the vehicle miles traveled (VMT) by each vehicle type as required in Section II.C.1.h and i. If changes occur, Malmstrom shall supply the information in Section II.C.1.j for the changed vehicles.

- 2. Malmstrom shall document the total Btu value of the fuel combusted in the three heating plant boilers, based on the equation in Section II.A.5. Further, by the 25th day of each month Malmstrom shall calculate the total Btu value of the fuel combusted during the previous month. The monthly information will be used to verify compliance with the limitation in Section II.A.6. A written report of the compliance verification shall be submitted to the Department annually. The report for the previous calendar year shall be submitted no later than March 15 and may be submitted along with the annual emission inventory (ARM 17.8.749).
- 3. Malmstrom shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745, that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit.

The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

- 4. Malmstrom shall document, by month, the hours of operation of the Building 780 emergency/back-up power generator at the facility. By the 25th day of each

month, Malmstrom shall total the hours of operation for the Building 780 emergency/back-up diesel generator during the previous month. The monthly information will be used to verify compliance with the rolling 12-month emergency/back-up status requirements. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

5. All records compiled in accordance with this permit must be maintained by Malmstrom as a permanent business record for at least five years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Notification

Malmstrom shall provide the Department with written notification of the following dates within the specified time periods (ARM 17.8.749):

1. All compliance source tests as required by the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
2. Anticipated date of commencement of modification of heating plant boilers #1 and #3 to install the new natural gas-fired low NO_x burners within 30 days of commencement of the modification (ARM 17.8.749).
3. Actual completion of modification to heating plant boilers #1 and #3 to install the new natural gas-fired low NO_x burners within 15 days of actual start up of the modified heating plant boilers #1 and #3 (ARM 17.8.749).

Section III: General Conditions

- A. Inspection – Malmstrom shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Malmstrom fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Malmstrom of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.
- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the

Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by Malmstrom may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

Permit Analysis
United States Air Force - Malmstrom Air Force Base
Permit #1427-08

I. Introduction/Process Description

A. Facility Description

The United States Air Force – Malmstrom Air Force Base (Malmstrom) is contained within approximately 3,159 acres, and is located in Township 20 North, Ranges 4 and 5 East, Sections 1, 2, 3, 10, 11, 12, 13, 14, and 15, in Cascade County. Malmstrom is located on the eastern edge of the City of Great Falls, Montana.

Malmstrom was established in 1942, and currently houses the 341st Missile Wing. The base itself contains the facilities necessary for all of its military and non-military personnel, which currently number between 4,000 and 5,000. The greatest stationary source of air contaminants at Malmstrom is the three heating plant boilers, although several other miscellaneous smaller sources of emissions are present at the base.

B. Permitted Equipment:

1. Heating Plant Boiler #1 (boiler #1), with dry lime scrubber and baghouse.
2. Heating Plant Boiler #2 (boiler #2), with dry lime scrubber and baghouse.
3. Heating Plant Boiler #3 (boiler #3), with dry lime scrubber and baghouse.
4. Two 210,000-gallon aboveground fuel storage tanks (H-1 and H-2).
5. Two 2.1 million British thermal unit per hour (MMBtu/hr) heat input capacity boilers in Building 1075.
6. Various emergency/back-up diesel-fired emergency generators.

C. Permit History

Permit #1427 was issued to Malmstrom on October 28, 1980. The application required a Prevention of Significant Deterioration (PSD) review by the state of Montana for sulfur dioxide (SO₂), particulate, and oxides of nitrogen (NO_x). The application was deemed complete September 4, 1979. The application was for the construction of a new heating plant at Malmstrom. Malmstrom proposed three high temperature hot water generators (heating plant boilers #1, #2, and #3) to be used as a heating plant for the base. Each boiler was rated at 85 MMBtu heat output per hour, with an input design capacity of 106.25 MMBtu/hr. Malmstrom identified that the three boilers would be capable of combusting coal. Two of the boilers would also have natural gas capabilities. The coal would generally be used only during the coldest periods of the year. At other times, the boilers would be operated using natural gas.

The Department of Environmental Quality (Department) determined the boilers were not subject to New Source Performance Standards (NSPS) because the size of the boilers is below the cutoff size contained in Subpart D and Da and the date of installation is before the effective date for Subpart Dc. Also, the "boilers" did not actually produce steam, they produce hot water.

Malmstrom was also required to obtain an Environmental Protection Agency (EPA) New

Source Review (NSR) Prevention of Significant Deterioration (PSD) of air quality permit for this project since the state of Montana did not have a fully approved program at the time the permit application was processed. The **EPA PSD Permit** was issued pursuant to 40 CFR 52.21 (as amended 43 FR 26388). This permit was issued June 1, 1981. The EPA PSD permit contains emission limits. One of the limits stated that the maximum operating level of the system could not be greater than the combined capacities of any two of the three boilers operating simultaneously.

In 1994, Malmstrom requested a permit alteration to remove the 85% control efficiency requirement contained in Permit #1427. The permit application was given Permit **#1427-01**. An incompleteness letter was sent to Malmstrom. Malmstrom chose not to respond and to have the application withdrawn. The application was withdrawn by Malmstrom and Permit #1427-01 was not issued.

Permit #1427-02 accomplished numerous permitting goals at Malmstrom. Specifically, the requirement that the dry scrubbers maintain a control efficiency of 85% for SO₂ was removed. That level of efficiency was not practical when the facility burned low sulfur coal or operated at low loads. Because the emissions under this scenario were below the limits identified in the Department permit, the Department determined the SO₂ emission limits contained in the permit were sufficient to maintain the ambient air quality of the area. Permit #1427-02 also identified the fuels each of the boilers were capable of burning.

In addition, Permit #1427-02 allowed Malmstrom to bypass the scrubbers and baghouses on the boilers during start up, until the scrubber inlet temperature reached approximately 350°F. At temperatures below this level, the moisture in the lime slurry would not be completely evaporated and would cause blinding of the bags. All emission limits were still in effect during periods of scrubber bypass.

Further, Permit #1427-02 authorized the modification of the #1 boiler to enable the boiler to fire coal and natural gas simultaneously. Prior to Permit #1427-02, the boiler could not physically fire both fuels at once. The permit also established limits for NO_x emissions and modified the SO₂ limits for the boilers. The SO₂ emission limit was changed from 37 lb/hour to 33.8 lb/hour and a limit of 0.320 lb/MMBtu was added to be consistent with the BACT determination at the time of EPA's PSD permit issuance. The permit also limited the total fuel consumption for the boilers. The fuel consumption limitation (along with the NO_x and SO₂ limits) ensured that emissions of any pollutant from the three boilers would be less than 250 tons/year, or less than the PSD major-source permitting threshold. Therefore, the installation of the boilers was not subject to the requirements of the PSD program and it was possible for EPA to revoke the PSD permit issued on June 1, 1981.

Permit #1427-02 also included the medical waste incinerator and the classified document incinerator to the list of permitted equipment on the base. Even though a permit was not required by the state at the time of construction, the Department determined a permit was necessary to meet the requirements of the Administrative Rules of Montana (ARM) 17.8.705 and for Malmstrom to operate the incinerators. The conditions applicable to the incinerators were included as part of that permit action.

Finally, Permit #1427-02 included the tanks installed in 1987, which Malmstrom was not required to permit at the time of construction. The Department determined that a permit was necessary to meet the requirements of ARM 17.8.705 and to operate the tanks. The conditions applicable to the tanks were included as part of the permit.

On July 17, 1996, the Department received information regarding minor facility changes. The facility changes were assigned Permit #1427-03. Subsequent to receipt of this information, the Department determined that the facility changes did not require any permit action. Therefore, Permit #1427-03 was not issued.

Permit Modification #1427-04 removed the Medical Waste Incinerator from Malmstrom's permit. Disposal of the medical red bag waste was to be accomplished through a private contractor, and the gas supply for the incinerator was disconnected.

In addition, Permit Modification #1427-04 removed two large fuel storage tanks (S-1 and S-2), subject to 40 CFR 60, Subpart Kb, from Malmstrom's permit and emission inventory. Malmstrom decommissioned the two large (1,050,000 gallons each) aboveground fuel storage tanks (S-1 and S-2) with the relocation of the 43rd Air Refueling Group. The remaining tanks (H-1 and H-2) were each 210,000-gallon and primarily supported the helicopters used by the 341st missile wing.

Further, the permit modification established a new testing campaign to begin by January 31, 2001, and to perform compliance testing on a once every four-year basis thereafter. Malmstrom requested a one-year extension to conduct emission testing on the base's heating plant boilers. The reasoning behind the request was that the boilers (Coal-fired) located at Malmstrom were selected for outsourcing and were to be operated by a private (non-government) contractor. The contractor that was awarded the bid for services began operation of the facilities on January 15, 2000.

Permit Alteration #1427-04 resulted in an overall decrease in the allowable emissions from the facility. Permit #1427-04 replaced Permit #1427-02.

On December 22, 1999, the Department received a request from Malmstrom for modification of Permit #1427-04. Condition II.A.18 in Permit #1427-04, regarding jet fuel storage tanks H-1 and H-2, required that Malmstrom comply with 40 CFR 60, Standards of Performance for New Stationary Sources, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels. However, based on information in the permit modification request, the Department determined that changes in Air Force policy and practice made 40 CFR 60, Subpart Kb, no longer applicable to jet fuel storage tanks H-1 and H-2.

Section I.B.5 of the permit analysis to Permit #1427-04 listed two 210,000-gallon storage tanks used for the storage of JP-4 and JP-8 jet fuel. Because of the physical characteristics of JP-4 jet fuel, and because Malmstrom had the option of storing JP-4 jet fuel in storage tanks H-1 and H-2, the tanks were subject to the requirements of 40 CFR 60, Subpart Kb. However, changes in Air Force policy dictated that the Air Force no longer utilize JP-4 jet fuel. Instead, Malmstrom reverted to the storage and use of JP-8 jet fuel only in the two affected storage tanks. JP-8 jet fuel has a vapor pressure <3.5 kPa; therefore, storage of JP-8 or a similar jet fuel with a vapor pressure <3.5 kPa rendered the jet fuel storage tanks H-1 and H-2 as non-affected sources under 40 CFR 60, Subpart Kb, 60.110b. Therefore, the fuel storage tanks H-1 and H-2 were no longer subject to the requirements of 40 CFR 60, Subpart Kb.

The permit action removed permit condition II.A.18 in Permit #1427-04 and relieved Malmstrom from the responsibility of compliance with 40 CFR 60, Subpart Kb, for jet fuel storage tanks H-1 and H-2. Further, the permit action added, in place of permit condition II.A.18 in Permit #1427-04, a condition requiring the storage of only JP-8 jet fuel or a similar jet fuel with a vapor pressure <3.5 kPa. Finally, the permit action updated the equipment list in Section I.B of the permit analysis to Permit #1427-04 to

properly identify the 210,000-gallon fuel storage tanks H-1 and H-2 and change the name of the boilers from High Temperature Hot Water Generators #1, #2, and #3 to Heating Plant Boilers #1, #2, and #3. Permit **#1427-05** replaced Permit #1427-04.

On November 26, 2002, the Department received a request for permit modification from Malmstrom. On August 28, 2002, the Department received a copy of a letter, dated November 5, 2001, from Malmstrom requesting a permit determination. The Department was unable to find any record of this letter being received on or around November 5, 2001. The permit determination request was for the removal of the existing Building 1075 natural gas fired boiler rated at 11.954 MMBtu/hr heat input capacity and replacement of the existing unit with two smaller 2.1 MMBtu/hr heat input capacity units. Because potential emissions from the replacement boilers were less than the de minimis threshold of 15 tons per year (tpy) for any regulated pollutant, the Department determined that the changes were accomplished in accordance with ARM 17.8.745(1).

The letter received by the Department on November 26, 2002, also indicated that Malmstrom intended to install and operate a 200-kilowatt (kW) emergency diesel generator in the Building 780, Missile Services Facility. Because potential emissions of all regulated pollutants from the proposed Building 780 emergency diesel generator, operating under emergency/back-up equipment status, were less than 15 tons per year, the Department determined that installation and operation of the Building 780 emergency diesel generator could be accomplished under the provisions of ARM 17.8.745.

On January 29, 2003, the Department received notice of a contested case hearing before the Montana Board of Environmental Review (Board) regarding specific conditions that were included in the Department's decision on Montana Air Quality Permit #1427-06, issued January 13, 2003. Based on the Settlement Stipulation and Order issued by the Board on March 28, 2003, several revisions were made to Permit #1427-06 prior to issuance as a final permit. A detailed discussion of these revisions is contained in Section I.D, Current Permit Action, to air quality Permit #1427-06. Permit **#1427-06** replaced Permit #1427-05.

On March 25, 2004, the Department received a complete permit application to modify Malmstrom's air quality Permit #1427-06. Malmstrom proposed process changes to current operations at heating plant boilers #1 and #3. The proposed changes included the following:

- Replacement of the existing motors driving the induced draft fans with new variable frequency drive motors.
- Replacement of the existing ash unloading system with a new ash unloading system.
- Modification of exhaust gas ductwork to increase spray dryer absorber (SDA) control efficiency of sulfur dioxide (SO₂) emissions.
- Installation of ductwork to provide effluent heat to the opacity monitors for the purpose of decreasing false increased opacity readings during foggy weather conditions.
- Removal of the existing 35 million British thermal unit per hour (MMBtu/hr) heat input capacity natural gas-fired burner from Boiler #1 and replacement of this burner with two 25 MMBtu/hr heat input capacity natural gas-fired low NO_x burners.
- Installation of two 25 MMBtu/hr heat input capacity natural gas-fired low NO_x burners on Boiler #3.
- Installation of a load simulator for the purpose of testing and evaluating the new low NO_x burners described above.

As detailed in a Department internal file memorandum dated January 16, 2004, and subsequent Department correspondence to Malmstrom dated March 15, 2004, the Department determined that Malmstrom is a major source as defined under the New Source Review (NSR) permitting program. However, potential emissions from the above detailed modifications were below the NSR – Prevention of Significant Deterioration (NSR/PSD) significance threshold for all pollutants. Therefore, the permit action was not subject to NSR/PSD review. An emission inventory detailing potential emissions from the proposed project was included in Section IV of the permit analysis to this permit. Permit #1427-07 replaced Permit #1427-06.

D. Current Permit Action

On May 16, 2005, the Department received a request from Malmstrom for changes to Montana Air Quality Permit #1427-07 under the provisions contained in ARM 17.8.764, Administrative Amendment to permit. The requested changes include the following:

- Removal of the Classified Document Incinerator and all associated requirements from the permit. The unit has been dismantled and removed from the facility; and
- The addition of “National Security Emergency” and “surge condition” language as recommended to Malmstrom by the United States Pentagon.

At this time, the Department does not believe that the addition of the requested “National Security Emergency” and “surge condition” language is appropriate for inclusion in the permit; therefore, the Department will not include this language under the current permit action. The Classified Document Incinerator and all associated requirements have been removed under the current permit action.

Further, based on information obtained through correspondence between the Department and Malmstrom, the Department determined that Malmstrom is a minor source of Hazardous Air Pollutants (HAPs), as defined under 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT). Based on this information, the Department determined that Malmstrom is not subject to the requirements contained in the Boiler MACT. A HAPs emission inventory is included in Section IV of the permit analysis to this permit. Permit #1427-08 replaces Permit #1427-07.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT) determinations, air quality impacts, and environmental assessments, are included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the ARMs and are available upon request from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
2. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

Malmstrom shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.
3. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by phone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than four hours.
4. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
5. ARM 17.8.222 Ambient Air Quality Standard for Lead
6. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀

Malmstrom must comply with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six consecutive minutes.
2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Malmstrom shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of

airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
6. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates by reference 40 CFR 60, Standards of Performance for New Stationary Sources (NSPS). The following sources are considered NSPS-affected facilities under the following subparts.

Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. This Subpart does not apply to the heating plant boilers. The units do not produce steam and, therefore, are not affected facilities.

Subpart Kb, Volatile Organic Liquid Storage Vessels. This subpart applies to tanks for which construction, reconstruction or modification commenced after July 23, 1984. The Department determined that Subpart Kb does not apply to the above-ground fuel storage tanks listed in Section I.B.4 of the analysis section of this permit.

7. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. The source, as defined and applied in 40 CFR 63, shall comply with the requirements of 40 CFR 63, as listed below:

Subpart A, General Provisions. These rules apply to all equipment or facilities subject to a National Emission Standard for Hazardous Air Pollutants (NESHAP) for source categories as listed below:

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT). On May 7, 2004, the Department sent Malmstrom initial correspondence indicating that Malmstrom may be subject to the requirements contained in the Boiler MACT. This determination was based on 1) the Department's conclusion that the Heating Plant Boilers were affected units, as defined under the Boiler MACT, and 2) Department emissions calculations using published HAPs emission factors (EPA, Compilation of Air Pollutant Emission Factors, AP-42, Section 1.1) establishing Malmstrom as a major source of HAPs.

Through various correspondence between the Department and Malmstrom and considerable effort by Malmstrom to demonstrate that the facility is a minor source of HAPs, including hydrochloric acid (HCl) and hydrofluoric acid (HF)

emissions source testing, the Department ultimately determined that Malmstrom is a minor source of HAPs and is not subject to the requirements contained in the Boiler MACT. The Department determined that the appropriate emission factors to be used for the calculation of HAPs emissions from the Malmstrom Heating Plant Boilers are found in Model 2f of the EPA's Boiler MACT emission factor development document titled "Development of Average Emission Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants". An emissions inventory demonstrating that Malmstrom is a minor source of HAPs is contained in Section IV of the permit analysis to this permit.

D. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. Malmstrom shall submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Malmstrom was not required to submit a fee because the permit action is administrative.
2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

E. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. Malmstrom has the PTE more than 25 tons per year of particulate matter (PM), PM with an aerodynamic diameter less than or equal to 10 microns (PM₁₀), oxides of nitrogen (NO_x), carbon monoxide (CO), and oxides of sulfur (SO_x); therefore, an air quality permit is required.
3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.
5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. Malmstrom was not required to submit an application because the current permit action is administrative. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. The current permit action is administrative and does not require public notice.
6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The BACT analysis is provided in Section III of this permit analysis.
8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.
9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Malmstrom of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*
10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than one year after the permit is issued.
12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the

Board or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, subchapters 8, 9, and 10. The current permit action is an administrative amendment.

14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a listed source, but emissions are greater than or equal to 250 tons per year; therefore, the facility is major. The current permit action will not cause a net emission increase of any regulated pollutant; therefore, the current permit action is not subject to major NSR review.

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
 - a. PTE > 100 tons/year of any pollutant;
 - b. PTE > 10 tons/year of any one HAP, PTE > 25 tons/year of a combination of all HAPs, or a lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/year of PM₁₀ in a serious PM₁₀ nonattainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #1427-08 for Malmstrom, the following conclusions were made:
 - a. The facility's PTE is greater than 100 tons/year for NO_x, CO, and SO₂.
 - b. The facility's PTE is less than 10 tons/year for a single HAP and less than 25

tons/year for all HAPs.

- c. This source is not located in a serious PM₁₀ nonattainment area.
- d. This facility is subject to NSPS requirements as listed in Section II.C.7 of the permit analysis.
- e. This source is not a Title IV affected source, nor a solid waste combustion unit.
- f. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Malmstrom is subject to the Title V operating permit program. Malmstrom currently operates under Title V Operating Permit #OP1427-04, which was issued final and effective on December 11, 2004. Further, in accordance with ARM 17.8.1227, the current permit action constitutes a significant modification of Malmstrom's Title V Operating Permit. Malmstrom submitted a Title V application for a significant modification to Title V Operating Permit #OP1427-04 concurrently with their Montana Air Quality Permit administrative amendment request.

III. BACT Determination

A BACT determination is required for each new or altered source. Malmstrom shall install on the new or altered source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The current permit action is an administrative amendment and does not add any new, or modify any existing, emitting unit; therefore, a BACT analysis and determination is not required for the current permit action.

IV. Emission Inventory

An expanded emission inventory, which encompasses all emission points considered in previous permit actions, is contained in the emission inventory section of each respective permit. The primary emission units at Malmstrom are the Heating Plant Boilers, which are inventoried below.

Criteria Pollutants: Heating Plant Boilers

Source	tons/year					
	PM	PM ₁₀	NO _x	SO ₂	CO	VOC
Heating Plant Boilers	52.6	52.6	249.8	159.8	138.8	1.6
Potential emissions included in this table represent worst-case emissions regardless of fuel-type combusted.						

Fuel consumption = 999,000 MMBtu/yr (Permit Limit)

If All Natural Gas:

Assume conservative heat content of 900 MMBtu/MMscf

$999000 \text{ MMBtu/yr} \div 900 \text{ MMBtu/MMscf} = 1110 \text{ MMscf/yr}$

If All Coal:

Assume conservative heat content of 18 MMBtu/ton

$999000 \text{ MMBtu/yr} \div 18 \text{ MMBtu/ton} = 55,500 \text{ tons coal/yr}$

Total Particulate (Coal and Natural Gas)

Emission Factor 4 lb/hour (Permit Limit)

PM = 4.0 lb/hour * 8760 hours/year * 0.0005 ton/lb

= 17.52 tons/year per Boiler

= 52.56 tons/year

PM₁₀ (Coal and Natural Gas)

Assume all TSP is PM₁₀

Emission Factor:	4	lb/hour (Permit Limit)
PM ₁₀ =	4.0	lb/hour * 8760 hours/year * 0.0005 ton/lb
=	17.52	tons/year per Boiler
=	52.56	tons/year

NO_x Emissions (Coal and Natural Gas):

Emission Factor:	0.5	lb/MMBtu (Permit Limit)
Fuel Consumption:	999000	MMBtu/yr {Permit Limit}
NO _x =	0.5	lb/MMBtu * 999000 MMBtu/yr * 0.0005 ton/lb
=	249.75	ton/yr

SO₂ Emissions (Coal):

Emission Factor:	0.32	lb/MMBtu (Permit Limit)
Fuel Consumption:	999000	MMBtu/yr (Permit Limit)
SO ₂ =	0.32	lb/MMBtu * 999000 MMBtu/yr * 0.0005 ton/lb
=	159.84	ton/yr

SO₂ Emissions (Natural Gas):

Emission Factor:	0.60	lb/MMscf (FIRE V 5.0 SCC 10200602)
SO ₂ =	1110	MMscf/yr * 0.60 lb/MMscf * 0.0005 ton/lb
=	0.33	ton/yr

CO Emissions (Coal)

Emission Factor:	5.00	lb/ton coal (FIRE V 5.0 SCC 10200204)
CO =	55500	tons coal/year * 5.00 lb/ton coal * 0.0005 ton/lb
=	138.75	ton/yr

CO Emissions (Natural Gas)

Emission Factor:	35.00	lb/MMscf (FIRE V 5.0 SCC 10200602)
CO =	1110	MMscf/yr * 35.00 lb/MMscf * 0.0005 ton/lb
=	19.43	ton/yr

VOC Emissions (Coal)

Emission Factor:	0.05	lb/ton (FIRE V 5.0 SCC 10200204)
VOC =	55500	tons coal/year * 0.05 lb/ton * 0.0005 ton/lb =
=	1.39	ton/yr

VOC Emissions (Natural Gas)

Emission Factor:	2.80	lb/MMscf (FIRE V 5.0 SCC 10200602)
VOC =	1110	MMscf/yr * 2.80 lb/MMscf * 0.0005 ton/lb =
=	1.55	ton/yr

Hazardous Air Pollutants: Heating Plant Boilers

Emission Inventory: HAPs of Concern*	
Pollutant	Potential To Emit (ton/yr)**
1,4-Dichlorobenzene	4.74E-04
16-PAH	4.88E-03
Acetaldehyde	1.14E-02
Acrolein	1.86E-03
Arsenic	1.04E-03
Benzene	4.50E-03
Beryllium	8.79E-05
Cadmium	1.51E-04
Chlorine	1.03E+00
Chromium	1.15E-03
Dibenzofuran	1.36E-06
Dibutylphthalate	1.25E-03
Dioxin	7.84E-07
Ethyl Benzene	5.59E-04
Formaldehyde	6.44E-03
Hexachlorobenzene	NA
Hydrochloric Acid	2.67E+00
Hydrofluoric Acid	1.94E-01
Lead	1.47E-03
m-Xylene	NA
Manganese	6.24E-03
Mercury	2.71E-03
Methyl Chloroform	1.97E-04
Methyl Ethyl Ketone	5.19E-02
Methylene Chloride	1.43E-02
Nickel	1.26E-03
o-Xylene	1.61E-04
Phosphorus	1.24E-01
Toluene	6.54E-03
Xylenes	5.84E-03
Total HAPs	4.14
* HAPs of Concern as indicated through 40 CFR 63, Subpart DDDDD, Emission Factor Development: OAR-2002-0058-0022. ** PTE based on permitted annual allowable boiler heat input (999,000 MMBtu/yr) combusting 100% coal with a combination dry lime scrubber and fabric filter baghouse emissions control (Model 2f: OAR-2002-0058-0022 "Development of Average Emissions Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emissions Standards for Hazardous Air Pollutants", October, 2002	

Example HAPs Calculation: A complete HAPs emission inventory is on file with the Department.

Hydrochloric Acid

Emission Factor: 5.35E-03 lb/MMBtu (Model 2f: OAR-2002-0058-0022)
 Allowable Heat Input: 999,000 MMBtu/year (Permit #1427-08)
 Calculations: $5.35E-03 \text{ lb/MMBtu} * 999,000 \text{ MMBtu/yr} * 0.0005 \text{ ton/lb} = 2.67 \text{ ton/yr}$

40 CFR 63, Subpart DDDDD – Applicability Analysis			
Pollutant	PTE*	Threshold*	Applicable
Cumulative HAPs	4.14**	25	No
Individual HAP (HCl)	2.67**	10	No
* Values represent tons of pollutant(s) per year ** PTE based on permitted annual allowable boiler heat input combusting 100% coal with a combination of dry lime scrubber and fabric filter baghouse emissions control (Model 2f: OAR-2002-0058-0022 “Development of Average Emissions Factors and Baseline Emission Estimates for the Industrial, Commercial, and Institutional Boilers and Process Heaters National Emissions Standards for Hazardous Air Pollutants”, October, 2002			

V. Air Quality Impacts

The current permit action is an administrative amendment and removes the Classified Document Incinerator from the permit; therefore, the current permit action does not result in any additional adverse air quality impacts to the area. Any potential impacts would be minor and positive impacts.

VI. Existing Air Quality

The facility is in an area identified as attainment for all pollutants. However, the facility is located near an area that has recently been re-designated attainment for CO under a limited maintenance plan. The Malmstrom facility has not been identified in any studies as impacting the previous nonattainment area. The current permit action is an administrative amendment and removes the Classified Document Incinerator from the permit; therefore, the current permit action will not result in any negative impact to existing air quality in the project area.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

The current permit action is an administrative amendment and does not require an Environmental Assessment.

Permit Analysis Prepared By: M. Eric Merchant, MPH

Date: August 2, 2005